

THE AMERICAN JOURNAL OF
OPHTHALMOLOGY.

VOL. XIII.

SEPTEMBER, 1896.

NO. 9.

ORIGINAL ARTICLES.

THE RACIAL AND GEOGRAPHIC DISTRIBUTION
OF TRACHOMA IN THE UNITED STATES
OF AMERICA.

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At the meeting of the International Medical Congress in Berlin trachoma came in for a considerable amount of discussion. The question of race was presented, principally by Dr. Chibret, of Clermont-Ferrand, France, and myself, Chibret pointing out that the pure Celt was to an extent immune and I that the negro in the United States was practically exempt. It was then under discussion to form an International Committee to report on the racial and geographic distribution of trachoma, but under the rules of the Congress it was not found possible. A collection of statistics and opinions, however, was informally decided upon and last year Dr. Chibret was appointed Chairman of a Committee by the French Society of Ophthalmologists to report on the subject at its meeting in May, 1896. Dr. Chibret asked me to coöperate with him and furnish data from the United States. The following is a copy of the report sent to him and which will be published in full in the Transactions of the Society.

In collecting these statistics and opinions respecting the geographic distribution and the influence of race upon the development of trachoma in the United States, I addressed

letters of inquiry to gentlemen of known experience and judgment residing in various sections of the country.

To these letters thirteen replies of greater or less fullness were received, which will be given in more or less detail in a subsequent part of this report. In summarizing the results obtained from an examination of these replies, we shall take the points under discussion seriatim:

1. All recognize the existence of a follicular conjunctivitis as distinct from true trachoma, though many acknowledge the difficulty of making a differential diagnosis in the earlier stages of the disease; and for this reason, no doubt, the percentage of trachoma in general is higher than it should be.

Andrews, of New York, while holding that pathologically and histologically there is no distinction between follicular conjunctivitis and true trachoma, is yet forced to admit a difference in their clinical course.

All who express an opinion recognize in trachoma a disease whose final termination is a destruction, to a greater or less extent, of the conjunctival tissue, with cicatricial contraction, leading to entropion.

2. As to contagion, opinions differ, though many are inclined to question its virulency. Some state that they have no knowledge of the direct transference of the disease from one person to another, and that it is not usual for more than one member of the same family to be affected with the disease at the same time, and that sometimes only one eye is attacked.

Others state in a general way that they believe the disease to be contagious, and two report a direct infection of an eye by the material expressed from a trachomatous conjunctiva by the forceps during the operation of "squeezing." These experiences while seeming to favor the contagiousness of trachoma, are not by any means conclusive; for while the discharge from the conjunctiva of an eye suffering from trachoma may be, and in certain stages of the affection usually is infectious to a degree, the diseased process following the infection is not necessarily trachoma. The infecting material produces an inflammation of the conjunctiva, and this conjunctivitis may lead to the development of trachoma in an eye predisposed to it. Usually the disease remains a follicular or a simple conjunctivitis.

The idea of the contagiousness of trachoma became firmly

impressed upon the professional mind when all forms of chronic conjunctivitis were classed as trachoma, and like all such accepted notions is not easy to eradicate. To establish the essential contagiousness of trachoma, as such, it is necessary to discover and isolate its peculiar microbe, and produce the disease in a sound conjunctiva. This has not been done in a manner satisfactory to the majority of investigators.

Moreover, the fact that the disease is not always most rife or pernicious in the over-crowded habitations of cities, but occurs with equal virulency in sparsely populated country districts and mountain regions (Ayres, Ray), would indicate that pure contagion plays an unimportant rôle in the development and spread of the disease. The statement that the disease is particularly rife in schools and asylums is not by any means universally true; and when such is proved to be the case, we should not attach all the blame to contagion.

3. The cosmopolitan population of the United States furnishes a fine field for studying the influence of race in the origin and propagation of trachoma.

There is no white race represented to any considerable extent in the United States, which is not reported by some one as liable to a greater or less degree. The Jews, the Irish, the Italians, seem to be the most affected. The Scandinavians also suffer, and the Chinese have the disease here as well as in China. The North American Indian,¹ I learn from other sources not comprehended in this report, is greatly afflicted; and I have myself, seen severe cases of the disease among them. The native "American"—that is, those born in this country, but whose pedigree is not known and which may be and usually is very heterogeneous, are by no means exempt. It is most interesting to note, in this connection, that the severe forms of trachoma in Kentucky and West Virginia, reported by Ayres and Ray, are among a population as purely American as any we have.

The only race among us which enjoys a practical immunity, is the negro. Callan (New York) does not recall a case

¹Dr. Chibret, in the report made to the French Society of which this paper is a part, states on the authority of a Canadian oculist, that the Iroquois, Hurons, Mic-Macs, Chippewas, Cris Santeux, etc., in Canada are absolutely immune against trachoma. This broad and sweeping statement I am forced to question, certainly as regards any of those tribes in the United States. I am in pursuit of further information on this subject.

among the negroes. Savage (Nashville) in a population 30 per cent. of which are negroes, has never seen a case among them, though it is very common among the whites of that section. Ray (Louisville) sees 800 to 1200 eye cases among the negroes annually, and not one of trachoma. It is common among the whites of that city. Phillips (Savannah, Ga.) has seen one case in the negro. White (Richmond, Va.), among a large negro population, has 43 cases of trachoma in 11,000 eye cases, one of which is a negro. Randolph (Baltimore), in the midst of a considerable negro population, no cases among the negroes. Ayres (Cincinnati) one case in the negro. Bruns (New Orleans, La.), in 1290 cases of conjunctival diseases (26.75 per cent. negroes), has 84 cases of trachoma in the white and 8 in the negro. As Bruns states that it is often difficult to make a clear differential diagnosis in the earlier stages, there is a probability of at least some of these 8 being follicular conjunctivitis.

In my own experience in Washington with a population about one-third of negro blood, and in a clinic nearly two-thirds of which are "colored," during a period of more than fifteen years, and with about 10,000 "colored" eye cases, I have seen not more than 6 negroes in which there was a suspicion even, of trachoma; and I have never seen a case of entropion in that race.

There seems, therefore, to be a perfect unanimity of opinion as to the practical immunity of the negro in the United States from trachoma. This coincides with the statements made by me in 1876, when I first called attention to the fact in a paper read before the International Ophthalmological Congress held in that year in New York, and reiterated on various occasions since.

The negro as a race still occupies an inferior position in this country, and the greater part of them live in crowded quarters and among unhygienic surroundings. They suffer much from tubercular and scrofulous diseases; and strumous affections of the conjunctiva and cornea form a large percentage of their eye troubles.

4. It will be gathered from a reading of these reports, that altitude has but little modifying influence upon the disease. In fact some of the most virulent cases are seen among the inhabitants of the mountains of West Virginia (Ayres;

also oral communication from Dr. Belt, now of Washington). Rivers, of Colorado, finds the disease at 5,000 feet, among railroad laborers; and even at an altitude of 10,000 feet at Leadville, Colorado. I have myself seen it among the whites of East Tennessee, more than 1,000 feet above the sea level.

Latitude seems to have but little influence also. It is no more common at Portland, Maine, or Portland, Oregon, than Savannah, Georgia, or New Orleans, Louisiana. The whites of the Middle States, of Tennessee, Kentucky and West Virginia are much more affected it seems, than either the extremes of North or South. Why these should be so severely affected is not at all clear. They are far inland and unaffected by the tide of immigration pouring into our seaport towns; and the foreign element which is most affected—the Irish, Jews, and Italians, form but an insignificant part of the population. Some parts of this territory are malarious, but others are mountainous and free from this miasm.

It would seem then, that trachoma is not to be found most commonly or in its most virulent forms, solely in the crowded precincts of cities, where contagion could have its fullest influence, nor always at low altitudes, nor in an equal degree among the poor and filthy of all races. In other words, environment plays a much less powerful rôle than has hitherto been supposed. Undoubtedly an inflammation of the conjunctiva of any kind will facilitate an outbreak of trachoma in an eye predisposed to the disease, in the same way that an attack of pneumonia will easily lead to an outbreak of tuberculosis in one with a tendency to that disease; but as we sift the evidence more and more carefully, we find that the idiosyncrasy of the individual is the important factor in the development of the disease.

In those possessed of a predisposition to trachoma, however, improper living and bad hygienic surroundings are, without question, large and most active elements in causing an outbreak of the affection; and in our therapeutics this should have a more prominent influence than it has hitherto had with the common acceptance of the disease as a mere local affection, instead of, as we believe, the manifestation of a dyscrasia.

DR. J. A. ANDREWS, New York City.—I am very sorry that I can not send you a satisfactory reply to your letter of

inquiry concerning trachoma. There is no subject in ophthalmology (with the exception, perhaps, of gonorrhœal ophthalmia) to which I have devoted more time and study than to that of trachoma, and I am very sorry to say that the results have been so unsatisfactory to myself.

I hold substantially the same views in regard to trachoma as those expressed in a rather lengthy article which I published in the *Archives of Medicine* (edited by E. C. Seguin), Vol. XI, June, 1884. I stated there that there was no justification upon pathologico-anatomical grounds for distinguishing trachoma from follicular conjunctivitis. In fact I described trachoma as a follicular disease of the conjunctiva. But I do recognize a *clinical* difference between follicular and trachomatous conjunctivitis.

The first nine volumes of my case book were destroyed by fire a few years ago; and as they contained the statistics bearing on the nationality of my cases of trachoma collected from my hospital experience, I can not send you such data as they would supply.

I have observed trachoma, and frequently, among the Irish. This simply means that the nationality of my patients at the Charity Hospital (where I have worked for thirteen years) is chiefly Irish.

As to altitude, you know it is said that trachoma does not originate in Switzerland. This immunity should, perhaps, be referred to climatic rather than mountainous conditions of the country, because the disease does spread in mountainous regions.

Last year I observed trachoma in a negro. I confirmed the diagnosis by examination of the tissues (histological examination). The patient was a full-blooded negro; his occupation that of a domestic. I feel pretty sure that the disease is contagious. I have seen the disease spread to every member of a family; but I have more frequently seen it in only one member of a family.

I saw a good deal of trachoma in China several years ago. It is a common disease among the Chinese.

DR. S. C. AYRES, Cincinnati, Ohio.—I am not one of those who class everything under trachoma. There is a vast difference between trachoma and conj. folliculosa. I read with

much interest a few years ago your observations on trachoma in the colored race. Up to that time I had never seen a genuine case among the colored people; but since then I have seen two or three cases among them. We have but few negroes here, so that our observations can not be extensive.

I enclose the report of St. Mary's Hospital on chronic trach. conjunctivitis. I think the report is correct so far as nationality is concerned, but is somewhat misleading; for *many* of the cases were the children of Irish and German parentage, judging from the names.

The worst cases we see now come from the mountains of West Virginia and from the various parts of Kentucky. We do not see proportionately as many or as severe cases as we did fifteen or twenty years ago.

REPORT OF ST. MARY'S HOSPITAL.

From United States,	98.
From Germany,	11.
From Ireland,	15.
From Italy,	1.
From Austria,	1.
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Total,	126.

DR. HENRY DICKSON BRUNS, New Orleans, La.—In reply to your interrogatories:

1. I am one of those who "recognize a follicular conjunctivitis which does not lead to destruction of the conjunctival tissues, as distinct from chronic trachoma which always leads to such destruction to a greater or less degree and ends in the production of entropion." I am free to confess, however, that in the earlier stages I am not always certain of my diagnosis, but must wait upon the progress and effects of the disease.

2. The population of New Orleans is cosmopolitan in a very high degree.

3. We have a large French element and a still larger one of native Americans of pure French descent—our "Creoles." Then we have a large Italian population—"Dagoes," many Germans, Spaniards, Mexicans, and the usual proportion of Irish common to American cities.

4. Of racial influence, I can give, save in the case of the negro (pure or mixed blood), only my impressions. Of for-

eigners, the Italians, especially recent immigrants, present by far the largest number of cases of trachoma; the Irish come next; and the Germans next. In every instance it is in the new-comers to our country, State or city, that we see the majority of cases. Among our Creoles, trachoma is certainly rare, and it is but little prevalent among the natives of New Orleans of any descent.

During eight or nine years' service in the Charity Hospital I used to see more of trachoma than I do now; and my strong impression is that these cases used to come to us from other cities and spend the winter in our wards. In the Eye, Ear, Nose and Throat Hospital, where I am now in charge of the Eye Department, and where our service is a visiting one, only operative cases being admitted, I see few cases of the disease in question; a strong confirmation of the correctness of my impression. Of 4,160 cases recorded and tabulated during the years 1893-94, of which 1,290 were cases of conjunctival affections, there were but 92 cases of trachoma (2.2 per cent. of all cases and 7.1 per cent. of conjunctival cases). In the year 1895, of 647 cases of conjunctival affections, 39 were cases of trachoma (6 per cent. of all conjunctival cases). Twelve of these (36 7 per cent.) were Italians ("Dagoes") of the lowest type. Nearly all the cases I have seen have been among the very humblest of our population.

As to the prevalence of this malady among the Negroes or those of Negro blood, I can offer, not mere impressions, but actual figures. The immunity to trachoma enjoyed by the negro is well shown in the tabulated reports from my clinic for the years 1893, 1894 and 1895. The normal, fixed, or regular percentage of those of negro blood who attend to the Eye Clinic of the E. E. N. and T. Hospital is about 25 per cent., determined by a comparison of many thousand cases. In the years 1893-94, 4,160 cases were treated, and the percentage of those of negro blood was exactly 26.75 per cent. Of these 1,290 were conjunctival affections, with 92 cases of trachoma, 84 white and 8 of negro blood; about two-tenths per cent. of all conjunctival cases. In the year 1895 there were 647 cases of conjunctival affections with 39 cases of trachoma, 31 white and 8 of negro blood; rather more than one per cent. of all conjunctival cases (1.23 per cent.).

5. New Orleans is (about) at the sea level.

6. Most of the Irish affected with the disease are common laborers. The Italians are field hands, shoemakers and perambulating tinkers.

DR. P. A. CALLAN, New York City.—As to the question of trachoma in the negro, it is rarely to be seen in this section of the country. I have gone through the Colored Orphan Asylum in this city, and I can not recall any cases. I see that you use the term of follicular conjunctivitis, and so do I, the frog-spawn trachoma of some writers.

As to the racial distribution of trachoma; here in New York City, the Irish and the Jews are the greatest sufferers and the Germans and the Italians are coming to swell the lists; the Slavs furnish cases in proportion to their numbers. We have not very many Chinese who present themselves for treatment.

Trachoma to my mind is decidedly contagious; our orphan asylums are too much in evidence to deny that. Not infrequently one eye is little if any affected. If we admit that great improvement has taken place in the general hygiene of orphans and the sanitary condition of asylums, we are led to believe that the too great crowding causes the infection through the air in a certain number of cases.

With regard to private cases, I see very few in my office. Unfortunately trachoma belongs to the poor; I say unfortunately, for their poverty excludes proper attention to the disease. Without consulting reports, my impression is that we do not see many cases of trachoma as formerly in our clinics.

DR. F. B. EATON, Portland, Oregon.—The following gives result of examination of my case books for a period for which I have time to go over in the short time you have allowed me. Only true trachoma is recorded.

My cases are drawn from the city, Oregon and Washington. The races are American, German, Irish, Scandinavian, Jews, Italians, and Chinese, predominating in the order given. Negroes (pure and mixed) do not exist over 2,000 to 3,000 in the city. Population 86,000. In twenty years' practice have never seen a case of trachoma in pure or mixed negroes.

In the other races I have excluded all traumatic ocular diseases, all ametropia, lachrymal and muscular diseases, and

the numbers of each race given in total of diseases, include only affections of the eyeball and eyelids. My proportion of the excluded affections is about that of any other oculist in a city.

Total No. of Americans	144;	Cases of trachoma	22 or	15.27%
" " " Germans	32;	" " "	2 "	6.20%
" " " Irish	12;	" " "	1 "	8.33%
" " " Jews	6;	" " "	1 "	16.60%
" " " Scandinav's	8;	" " "	1 "	12.50%
" " " Italians	3;	" " "	0 "	0.00%

These do not include my hospital cases, of which I have no record; they have been about the same proportions.

Trachoma is proportionately frequent among the Chinese in this city, of which we have about four or five thousand. This seems due to the close, narrow quarters they occupy, generally smoky, and possibly to their diet. I have no record of Chinese cases, but have seen proportionally, many.

Altitude above the sea, 30 feet.

The dry summer season increases trachoma and intensifies it decidedly, as does high temperature. Altitude diminishes it in the Eastern part of State. (Mountains).

Have no evidence of direct transference by contagion; have never seen two persons in the same family affected that I can remember.

The only occupations I have noticed to favor trachoma are farming, herding, and constantly attending on horses. The last appears to me to decidedly favor the disease.

DR. E. E. HOLT, Portland, Maine.—In reply I would say that I am one that recognizes follicular conjunctivitis and trachoma as two distinct diseases, but I do not have enough of either to become very familiar with them. I see cases in the Jews, Scandinavians, Irish, and the native born, the frequency being in the order named.

Our altitude is but little above the sea level. The disease seems to manifest itself more in the summer. I have no direct and positive evidence that trachoma is transferred from one person to another, but circumstances have been such as to make me believe it is transferred from one person to another. Occupation does not seem to affect it one way or the other.

DR. S. LATIMER PHILLIPS, Savannah, Ga.—In reply to your letter of January 3, 1896, I would say:

1. In my opinion there are two forms of granular conjunctivitis (*a*) acute, (*b*) chronic or true trachoma.

2. True trachoma is very rare in this section of the country, and where it is found is among the poor and uncared for. The population of Savannah is of two kinds, white with a fair sprinkling of German, Irish, Jew, Italian and Chinese; the other kind, negro and mulatto. I have seen one case of trachoma in a Chinese laundryman. In an experience of nine years' practice of ophthalmology in this section, I have only seen one case of trachoma in the negro race. As to the negroes of the Sea Islands of South Carolina, I can not tell you much. Among those who have come to Savannah for eye treatment I have not seen a case of trachoma. They are of the same race as the negroes on the mainland, but from long isolation, lasting through years, with but little if any communication with other negroes or whites, they have acquired a dialect entirely distinct from that of the negroes of other sections, in fact almost wholly a language of their own. To the uninitiated it is indeed a strange and foreign tongue.

3. Savannah is situated on a sandy bluff forty feet above the river and gradually sloping to the East, South and West into lowlands. Owing to its situation land for suitable building sites comes high; and while we might call the city an openly built one, with its wide streets and frequent squares, still the poor are much crowded into certain localities with bad hygienic surroundings. Season, temperature and altitude have nothing to do with the frequency of trachoma in my opinion, but the hygienic surroundings everything.

4. I am not prepared to say that trachoma is non-contagious, though in my experience I have not seen it spread from one member of a family attacked to another. The cases I have seen have been isolated ones.

5. There are no occupations in which the disease is particularly prevalent.

DR. R. L. RANDOLPH, Baltimore, Md.—I look upon follicular conjunctivitis and trachoma as absolutely distinct. The variety leading to destruction of tissue, etc., is the only trachoma in my opinion.

Baltimore has a population of nearly 500,000. Of these 56,000 are Germans, 67,000 negroes, 5,000 are Russian Jews and the remainder Americans with some hundreds from a few other nationalities. The city is from fifty to seventy-five feet above sea level. I do not think that season, temperature, etc., influence the disease in any way.

I have never seen trachoma in a negro.

With few exceptions the disease is seen exclusively among Russian Jews, most of them tailors. I have seen a few cases where contagion was clearly traceable; but ordinarily the patient seen is the only one in the family attacked—that is, so far as I could learn from the patient.

DR. J. M. RAY, Louisville, Ky.—I believe in and recognize a difference between so-called "follicular trachoma" and the genuine "disease."

I see in hospital and dispensary practice from eight to twelve hundred negroes yearly, and have never seen a case of genuine trachoma, the kind that produces trichiasis and entropion. I have seen a few cases of "follicular trachoma" in mulattoes, and one that was accompanied with a corneal ulcer that had been diagnosed as true trachoma; but I did not so consider it. The people in Kentucky are largely natives and emigrants from States farther East, especially Virginia. The foreign element is small, yet many of the Polish Jews suffer from true trachoma. Trachoma is quite a common disease. In fact the most frequent eye disease that I see with the exception of phlyctenular conjunctivitis. The natives suffer more than any other class I see because they are largely in the majority. There is prevalent through the southern and eastern part of this State a form of trachoma frequently non-inflammatory in its early stages, but eventually producing enormous thickenings of the lid, great corneal vascularity and much deformity from conjunctival cicatrization. It will often affect several members of the same family. I know of instances where the entire family, parents and three to five children, are all suffering from the sequelæ. These cases come from the poorer sections of the State and thinly settled neighborhoods, and I have several times tried to trace the source of contagion, but not with uniform success.

The Kentucky Institute for the Blind contains 139 white

and 36 negro inmates. Of these, 21, all whites, are blind from sequelæ of trachoma. Of these 21, three-fourths are from the eastern and southern parts of the State and from the country, and not from the cities or large towns. Laurel county, a very poor county, furnishes more than any other one county. This county is 1,200 feet above sea level and is a pauper county. Louisville is next in number. This city is 420 feet above sea level.

I have noticed that season favors the development of the disease. Generally in the spring I see quite a number of cases of acute and inflammatory trachoma that if left untreated lead to vascularity of cornea and ulceration. These cases have, however, been the ones that are the most amenable to proper treatment.

I know of many instances of contagion. An assistant in the clinic of a friend of mine had contracted trachoma during a crushing operation, and has suffered seriously from it. In three institutions under my care I have seen the disease develop as the result of the admission of an infected child; a number of the cases required much time and treatment to eradicate. These cases were, however, of the acute variety. In the chronic form with secretion, I believe that by wash basins and towels in the course of time it is transmitted, but not easily. I can not explain certain cases sometimes seen in which only one eye becomes diseased. I have known cases of this kind to go for ten years without the second eye becoming involved.

We have no Indians in this State, and the German population is small outside of this city. I have noticed that the class of cases brought here from the State are, as a rule, fair-complexioned, light-haired subjects, and have been raised on hog meat and cured meats, with a very small proportion of fresh vegetables and meats. —

DR. E. C. RIVERS, Denver Colorado.—I believe trachoma and follicular conjunctivitis are two distinct diseases, and my answers to your questions are entirely confined to trachoma—meaning usually a very chronic course ending in destruction more or less complete of the mucous membrane.

The altitude of Denver is 5,200 feet, but my patients come from all over Colorado, New Mexico, Wyoming, Kansas and Nebraska. Nationalities are of all kinds. I have practiced

here since 1881. Our climate is very dry and dusty and our sun shines nearly every day and is very bright.

I have for several years paid particular attention to the prevalence of trachoma to see if the general idea that altitude affected it favorably was correct. I have observed no difference in its frequency and severity here than I did in Baltimore when I was Dr. Chisolm's assistant for several years. I have seen it occur in Leadville (over 10,000 feet) in as severe a form as anywhere else, and at all other altitudes at which we have any towns.

This part of our country is sparsely settled. Our people live on ranches or at mines which are in most instances miles apart. We have no tenement dwellers; no crowding, except in railroad grading camps, and I find the proportion of trachomatous conjunctivitis, while less in proportion to all eye diseases here than in the East, still no less than our more favorable sanitary conditions would account for. And in the crowded grading camps it is just as frequent and just as severe without regard to altitude or season. I, at one time, began to keep exact dates on the subject; but the extreme uncertainty from my patients' history of where and when the trouble began discouraged me.

I find it is quite frequent among the Chinese, Italians, Jews, Americans and Scandinavians in the order given. The same order would represent the disregard of proper respect to sanitary laws. Of course I use the word American to represent the laboring classes of this country, not the so-called higher classes.

In regard to the Indian I have had no experience, but the Jesuit fathers who live among them inform me that they suffer a great deal from chronic sore eyes, due to the smoke and bad air in their tepees.

I have never seen a case in a negro (of full or mixed blood) although we have several thousand among us.

It naturally affects more than one member of a family.

In operating on a case in November, 1894 with Noyes' forceps I accidentally got some of the "juice" directly into my right eye. Ten days afterwards my right eye became very much inflamed and swollen with all the symptoms of acute trachoma. I could not see to read or operate for nearly five months. My left eye became affected three weeks after the

first. It only yielded to the daily application of one per cent. solution argent. nitric. to the eyelid. I could not examine my own conjunctivitis very closely, but I am satisfied that I had trachoma and from direct infection.

I find no occupation subjecting its followers to it except such as violate proper sanitary laws.

DR. S. G. SAVAGE, Nashville, Tennessee.—1. I recognize trachoma as distinct from follicular and papillary conjunctivitis.

2. I have never seen a case of trachoma in a pure negro, and not over three times in a mulatto. About 30 per cent. of our population is colored. We have some whites of foreign birth but not a great number. I have seen many cases of trachoma among the Irish, but only a few cases among the Jews. I have not had the opportunity to observe Italians, Scandinavians and Indians.

3. There is one orphanage in this city with 23 inmates, 17 of whom now have trachoma. There is an industrial school with more than 100 inmates, $33\frac{1}{3}$ per cent. of whom are said to have trachoma. (These I have not seen, but one of my pupils has seen them). I suppose no one doubts that trachoma is contagious.

DR. W. F. SOUTHARD, San Francisco, Cal.—The following results I give you for what they are worth. Trachoma is not a very prevalent disease with us, not sufficient to afford valuable data for scientific purposes. We have a cosmopolitan population; Americans, Irish, Germans, Chinese, Hebrews, Italians, Portuguese, Spanish, Japanese, Negroes, Scandinavians, English and Russians in about the order named.

Trachoma is not found among one class more than another unless it be among the Chinese. The Chinese appear in our clinics, but not in great numbers. Occasionally we learn of trachoma attacking each member of the family. Granular conjunctivitis is quite common. The altitude of San Francisco varies from a few feet above the sea level to several hundred feet at highest point in city limits. Temperature is very even throughout the year. During the summer months we have the trade winds which blow steadily from the ocean. All impurities are thus driven off and the air is kept fresh. In the winter we have but little wind, but enough rain-fall—averaging 24 inches—to keep the atmosphere clean. Possibly from these

causes we have never had any outbreak of trachoma among the poorer classes or in any public institution. In sixteen years' practice here I have had but very few cases of true trachoma.

DR. JOSEPH A. WHITE, Richmond, Va.--I want to say that I am not one of those who confound conjunctivitis with granular lids, except when the differential diagnosis is so uncertain that we can not decide which it is; but in the reports of the Eye, Ear and Throat Infirmary I find that some of my assistants have been confounding follicular conjunctivitis with trachoma and hence put the number of cases in our report a little larger than it should be. We have had 43 cases of granular lids in something over 11,000 eye cases. Of this number a few might be excluded as having been cases of follicular conjunctivitis, classed under the heading of trachoma. Nearly all these were among white persons, three or four of them were among colored people, and only one case in a pure bred negro. You can see from this statement that not only negroes seem to be particularly exempt from this, but even the white population here very rarely show any signs of it. The few cases we have seen have been largely among persons who came here from a distance, several having been Russian Jews.

CONCERNING SUB-CONJUNCTIVAL INJECTIONS OF SODIUM CHLORIDE VERSUS MERCURIC CHLORIDE IN VARIOUS OCULAR DISEASES, WITH CASES.

BY CLARENCE A. VEASEY, A.M., M.D., PHILADELPHIA, PA.,

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Notwithstanding the great amount of literature concerning sub-conjunctival injections of mercuric chloride in various ocular affections that has been produced within the past few years, the subject is far from being settled as there still exists much difference of opinion among ophthalmic surgeons as to their value, indications and method of action.

It is claimed by many that the good effects that are obtained in certain selected cases are produced by the mercury (though exceedingly small in amount) coming directly in contact with the diseased process in the eye without having to go through the whole system. This seemed very plausible at first, and especially so after Pflüger claimed to have found the drug in the tissues of eyes enucleated some time, after injections had been made. On the other hand, some competent observers have failed to confirm Pflüger's experiments. This gave rise to reasonable doubt as to the mercury alone causing the beneficial effects that had been obtained, so in certain cases simple distilled water was employed instead of the mercurial solution. The great drawback to the latter method was the severe pain that followed each injection, so a solution of sodium chloride was then tried. This gave rise to no pain and in the cases in which it was used produced fully as good results as did the mercurial solution. The fact that injections of distilled water do good but cause considerable pain and that injections of a solution of sodium chloride also act beneficially but give rise to no pain disprove the opinion that in the injections of the solution of mercuric chloride it is the action of the mercury alone that produces the good results and goes far towards proving the theory that these good results are produced by the unblocking, as it were, of the engorged and sluggish lymph channels.

The following cases taken from my private records and from the service of Dr. de Schweinitz at the Jefferson Medical College Hospital, are a few among those I have injected with the sodium chloride solution that will illustrate the above remarks. During the use of the injections no other form of medication was employed except the instillation of an atropine solution.

CASE I. *Double Syphilitic Iritis*.—A. M., male, Italian, aged 40 years, presented himself at the dispensary of the Jefferson Medical College Hospital for treatment of his "sore eyes." Examination showed a double syphilitic plastic iritis, the initial lesion having been contracted four months earlier. There were present the usual symptoms of pericorneal injection, intense pain, photophobia, lachrymation and a contracted pupil with posterior synechiæ. These symptoms had been present for four days. In the right eye the iris was attached to the lens capsule by its entire pupillary border, excepting a

very small portion in the upper and outer quadrant, this being the only part that would dilate, after the frequent instillation of an atropin solution. The media were hazy but there was an indistinct view of the fundus that showed an oval disc, rather large veins but no gross lesions. In the left eye there was also almost complete annular attachment of the iris, the condition of the media and fundus being the same as in the right eye. Vision of each eye equaled $\frac{20}{60}$. Instillations of atropin at frequent intervals for twenty-four hours resulted in no improvement of the pain and very limited dilatation of the pupils. An injection of mercuric chloride (1-2000) was now made beneath the conjunctiva of the right eye and injection of sodium chloride ($\frac{2}{10}$ of 1% solution) beneath the conjunctiva of the left. On the following day the pupils were dilated *ad maximum*, the pain was gone and the patient stated that he had spent the first comfortable night for nearly a week. There was no appreciable difference in the effects of the two solutions. This treatment was followed up until he had received five injections of the mercuric chloride solution in the right eye and five injections of the sodium chloride solution in the left, the usual interval between the injections being two or three days. No other medication was employed except the instillation of the atropine solution. There had been no pain since the first injections were made, the pupils were completely dilated and it was impossible to detect the slightest difference between the effects produced by the two solutions. Vision of each eye equaled $\frac{20}{xxx}$. There was, of course, some pigment left on the lens capsule in each eye.

CASE II. *Plastic Syphilitic Iritis*.—C. B., male, aged 35 years, applied for treatment for his sore eye which had been inflamed for two days. There were the usual symptoms, with small synechiæ up and out, of a plastic iritis in the right eye. Vision equaled $\frac{20}{6}$. In the left eye there was a slight conjunctivitis, vision equaled $\frac{20}{xx}$. The pain was exceedingly severe. Atropine was instilled and he was given a sub-conjunctival injection of the salt solution. On the following day he returned entirely free from pain, the pupil dilated, pericorneal injection much less and the photophobia diminished. Similar injections were made on alternate days until he had received four when the inflammation was entirely gone.

CASE III. *Rheumatic Iritis*.—H. F., male, aged 31 years, consulted me for an attack of rheumatic iritis. No specific

history could be obtained. He had had severe attacks of the same character before, each time being treated by a competent ophthalmic surgeon, who had diagnosed the condition as rheumatic iritis, and had relieved it by the use of salicylates. The pain was intense, and desiring to ascertain what effect an injection of the salt solution would have in such a case one was given at once. The next day he returned with a complete cessation of the pain, except when exposed to a bright light, the pupil fully dilated, and a marked reduction in the inflammatory condition. He was given five other injections, after which the iritis was practically well, when he was placed on the anti-rheumatic treatment.

CASE IV. *Episcleritis*.—A. D., male, aged 58 years, came for the treatment of an inflamed eye which had troubled him for six months. Examination showed an episcleritis in the left eye, the nodule being situated to the outer side of the cornea. He had taken salicylates, iodides and mercury without any appreciable improvement. There were no changes in the fundi. He was given an injection of the salt solution as near the nodule as possible. This was repeated twice at intervals of three days when the nodule and inflammatory patch had disappeared. The patient was under observation for several months after this but there was no recurrence.

CASE V. *Interstitial Keratitis*.—A. B., male, miner, aged 20 years. In each eye the cornea was markedly infiltrated, pannus was present, and no view of the fundus could be obtained. For three months he was treated with mercurials, iodides and topical applications, at the expiration of this time his eyes being much improved. He disappeared for a month when he returned with his eyes in a condition worse than before. He was then given, at varying intervals depending on the amount of reaction, seven injections of the mercurial solution in one eye and the same number of injections of the salt solution in the other eye without any improvement whatever. The mercurial solution caused him more pain when being injected than the salt solution; excepting this, there was no difference in the results. After another course of mercurials and iodides he left much improved, but before he was entirely well.

CASE VI. *Plastic Syphilitic Iritis*.—J. C., male, photographer, aged 28 years. In February of this year the patient was treated for an acute catarrhal conjunctivitis from which he recovered in a few days. In March he re-appeared with an at-

tack of plastic iritis in the right eye. After three injections of the bichloride solution the eye was again well. Two months later there was a recurrence in the same eye for which he was given three injections of the salt solution. The eye was again well and the second attack of inflammation had subsided equally as quickly from the use of the salt injections as the first did from the mercurial injections.

CASE VII. *Double Plastic Syphilitic Iritis*.—A. M., male, Italian, aged 42 years. Initial lesion four months before. Presented himself for treatment of a double iritis. In each eye there was nearly complete annular synechia. Pain was very great and no view of either fundus could be obtained. Four injections of the mercurial solution were given in one eye and the same number of the salt solution in the other, after the internal administration of mercurials and iodides for a week failed to make any improvement. For the severe pain he had received phenacetine, antipyrine, hyoscine and morphine, the latter being the only drug that gave sufficient relief to permit him to sleep. Two hours after he had received the first injections the pain had subsided in the eye that had received the salt solution, and was much less intense in the eye that had received the mercurial solution. After the four injections the inflammatory process had subsided in each eye, the pupils were round, the fundi distinctly seen and normal. Vision which equaled $\frac{10}{60}$ in each eye at the time of the first injection now equaled $\frac{20}{300}$.

CASE VIII. *Sub-Conjunctival Hæmorrhage*.—P. S., male, aged 30 years, came for the treatment of a large sub-conjunctival hæmorrhage of the left eye which had been produced by a blow. The hæmorrhage was about 15 mm. \times 30 mm. in extent. Knowing how long it usually took for such a hæmorrhage to disappear I tried injections of the salt solution with the hope that the alkalinity of the solution together with the opening of the lymph channels might cause it to disappear more rapidly. I was not disappointed, for after two injections the dense redness was gone though beneath the conjunctiva there remained a dirty appearance which lasted for about a week.

CASE IX. *Chronic Iritis*.—Mrs. R. C., aged 36 years. Had suffered from chronic iritis for six years during which time she had been thoroughly dosed with salicylates, iodides and mercurials. The vision was gradually growing worse at

the time she came under treatment being, with the correcting lens, for the right eye $\frac{3}{\text{cc}}$, and for the left $\frac{12}{\text{cc}}$. After trying pilocarpine sweats, in addition to the treatment she had been receiving, she was given injections of the salt solution in each eye, receiving altogether fifteen. Vision improved to $\frac{8}{\text{cc}}$ for the right and to $\frac{16}{\text{cc}}$ for the left eye. One morning in making an injection the eye was not thoroughly cocainized and the needle piercing the conjunctiva gave her some pain. After this she refused to continue the treatment.

The following conclusions seem justifiable:

1. Sub-conjunctival injections of solutions of sodium chloride produce equally as beneficial results in the treatment of ocular affections as do sub-conjunctival injections of solutions of mercuric chloride.
2. The good results obtained from sub-conjunctival injections of solutions of mercuric chloride are not due to any specific action of the minute amount of mercury that may come in contact with the inflammatory process but probably to the unblocking of the engorged lymph channels.
3. Sub-conjunctival injections of solutions of sodium chloride are of the greatest value in treating iritis and especially in checking the severe pain, relieving it, generally, in a very short time after the first injection is made.
4. Sub-conjunctival injections of solutions of sodium chloride produce less discomfort than similar injections of solutions of mercuric chloride and never cause any adhesion between the conjunctiva and sclera which so frequently follows injections of the latter.
5. Sub-conjunctival injections of solutions of sodium chloride are of much value in producing the rapid absorption of sub-conjunctival hæmorrhages, which, as is well known, are removed, as a rule, only by time.

NOTE.—Recent investigations on animals' eyes by Geering, of Basel, show that in almost all cases in which there have been given sub-conjunctival injections of mercuric chloride there are found on microscopical examination numerous adhesions between the periphery of the iris and the cornea in the region of the filtration angle. In no one of his experiments did he, however, get a glaucomatous rise of tension though this possibility should be remembered. Whether sub-conjunctival injection of the salt solution will produce similar adhesions remains to be determined by further experiment.

DISEASES OF THE LENS.—337 Cases.

[Tables Concluded From August Number.]

DIAGNOSIS.	RACE:		SEX:		AGE:		VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	From	to	avg.	from				
Aphakia, (operative)	11	2	6	7	12	70	50	Fog. 8 ft. 1 ft.	Glasses	Longest 12 days	Improved	V. = Fingers 4 feet to 30/30.
Aphakia, traumatic	1		1			47		30/200	Glasses	One day	Improved	
Cataract, congenital	7	4	7	4	1 month	23	5½	30/200	1 p. 5 cases needed; 1 double iridectomy	2 needed cases left before treatment completed; 1, 88 days; 1, 70 and 1, 11 days Iridectomy case	Improved, six cases	
Cataract, pathological (secondary to iridochoroiditis)	5	2	3	4	13	37	24		1 p. 1 unsuccessful and 1 successful extraction	57 days	Unimproved	Successful extraction failed to improve V.
Cataract, polar, anterior	2		2		21	28		30/200	Fog. 1 double iridectomy 3 ft.		R. lens became opaque, L. greatly improved	
Cataract, secondary capsular	5	2	4	3	15	60	33	Fog. 3 ft.	1 p. Needed, 6 cases	Average 11 days	Improved, five cases	V. on discharge: I = 30/11, I = 30/20, I = 15/200
Cataract, senile, incipient, with retinitis pigmentosa	1		1			40		10/200	Galezowski's extraction; ant. chamber washed out with L.'s syringe (iridectomy)	53 days	Improved	V. = 20/50
Cataract, senile, incipient	45	12	28	29	38	92	60	30/20	None			
Cataract, senile, immature	37	16	25	28	30	76	60	30/40	1 p. 2 cases extraction as above	21 days	Improved; 1 occlusion of pupil	V. = 30/40

Cataract, senile, mature	37	20	32	25	34	86	60	1. p. 3 cases above	Average 30 days	2 improved; 1 worse	V. = $\frac{20}{30}$ and $\frac{20}{40}$
								35 cases modern flap extraction with iridectomy, sometimes with, sometimes without, cystotomy	Shortest 12 days Longest 84 days Average 31 days	Successes 28, 80 percent. Failures 7, 20 percent.	$\frac{20}{30}$ 15, $\frac{20}{30}$ 20, $\frac{20}{30}$ 4, $\frac{20}{30}$ 3, $\frac{20}{30}$ 4, $\frac{20}{30}$ 10, $\frac{20}{30}$ 100, 4 count fingers at 20 feet and the others are not recorded.
Cataract, traumatic	15	8	20	3	2	80	28	l. p. Atropine and hot bathing Extraction with iridectomy Extraction with iridectomy and washing out ant. chamb. with L's syringe Removal under cocaine	Unknown Unknown; 20, 58 and 61 days 2, 28 days; 1 unknown	Improved, two cases Improved, four cases Improved, two cases; 1 worse	In two foreign body removed. Panophth. and phthisis b.
Dislocated lens Dislocated lens (sub-conjunctival)	4 1		3 1	1	34	70 34	57	l. p. Eng. Removal under cocaine	1 day 10 days	Improved Improved	V. = $\frac{20}{30}$ Injury one and a half years ago.
Totals . .	171	66	133	104							

Percentage of Females, 43 + %.

Percentage of Negroes, 27 + %.

DISEASES OF THE OPTIC NERVE AND RETINA.—140 Cases.

Amblyopia, congenital	4	2	17	14	Eng. $\frac{20}{100}$ 3 ft.	None	Stationary
Amblyopia, from dental irritation		1		24		Atropine; attention to 9 days teeth	Cured
Amblyopia, hysterical	1	1	68			No further record	
Amblyopia, hysterical L. E.; R. E., incipient atrophy of globe	1	1	16			Atropine in L. E., 2 days	Cured

V. = $\frac{20}{30}$

V. = $\frac{20}{30}$

DISEASES OF THE OPTIC NERVE AND RETINA.—Continued.

DIAGNOSIS.	RACE:		SEX:			AGE.		VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.		From	to	avg.	from				
Amblyopia, toxic (tobacco and alcohol)	17	3	20			29	63	42	$\frac{20}{40}$ to $\frac{4}{300}$	Abstinence; strychnia hypodermatically gr. $\frac{1}{30}$ increased to gr. $\frac{1}{16}$ daily No further record	1, 30 and 1, 37 days	Cured	V. $\frac{20}{80}$.
Amblyopia, uræmic	1		1				42		$\frac{20}{100}$				
Detachment of retina	4		3	1		6	29	16	l. p.	None. One case had V. $\frac{20}{30}$ in other eye and one had syphilis 6 years ago, floating opacities in other eye with V. $\frac{20}{40}$. Quinine, iron and strychnine	36 days	Cured, 1 case; others never returned	
Hemeralopia		2	2			27	44		$\frac{20}{15}$ to $\frac{20}{30}$			Improved	
Hæmorrhage, retinal (eccentric)	1		1				27		$\frac{20}{15}$	Atropine and hot applications	18 days	Cured	Eyes were painful and when reading there was photophobia; V. under atropine $\frac{20}{80}$.
Hyperæmia of retina (?)	1			1			15		$\frac{20}{20}$	Atropine	23 days	Cured	V. $\frac{20}{15}$.
Hyperæmia of retina, traumatic. (blow on head caused headache and blindness)		1		1			16		$\frac{20}{40}$	Atropine	21 days	Cured	
Glioma		1					2½			None. Began 18 mos. ago; tumors of temple, shoulder and arm.			

Neuritis	5	1	5	1	24	55	38	³⁰ / ₁₀	³⁰ / ₁₀₀	Never returned for treatment. One was a barkeeper; 1 a painter; 1 a cook; 1 an old syphilitic; 1 a bad malarial history	Average 40 days	1 unknown, 1 better, 1 worse	V. from ³⁰ / ₁₀ raised to ²⁰ / ₂₀ .
Neuritis, retro-bulbar	2	1	3		14	34	28	²⁰ / ₁₀₀	Fug. 1 ft.	KI, HgCl ₂ and strychnine	Average 37 days	Cured, 1 case	
Neuro-retinitis	9	2	7	4	28	56	37	²⁰ / ₄₀	²⁰ / ₁₀	KI. and strychnine (only one case took treatment)			
Optic atrophy, congenital	1		1							No further record			
Optic atrophy, incipient	9	3	9	3	23	61	44	²⁰ / ₄₀	⁸ / ₁₀₀	Strychnia hypodermatically up to gr. ¹ / ₆	Average 75 days	Cured, 4 cases	V. on discharge from ²⁰ / ₁₅ to ²⁰ / ₃₀ .
Optic atrophy, partial	17	9	18	8	10	92	43	²⁰ / ₄₀	l. p.	In two cases strychn. hypod. up to gr. ¹ / ₆	1, 49 and 1, 222 days	Improved, one; stationary, one case	In first case V. in 49 days improved from l. p. to ¹⁰ / ₂₀₀ and from ²⁰ / ₁₀ to ²⁰ / ₅₀ .
Optic atrophy, total	21	5	19	7	2	81	46	l. p.		None. Child of 2 was hydrocephalic			
Retinitis	2	1	1	1	20	39	²⁰ / ₁₀	²⁰ / ₁₀₀	KI.		95 days	Cured, 1 case; 1 unknown	
Retinitis, hemorrhagic	1	1	2		21	38	²⁰ / ₂₀₀	Fug. 1 ft.	No further record				
Retinitis, hemorrhagic, malarial	1		1	1		41	²⁰ / ₂₀		Quinine, arsenic, strychnine and iron		2 weeks	Cured	
Retinitis, pigmentosa	2	3	3	2	32	52	48	²⁰ / ₃₀	l. p.	None			
Retinitis, renal	7		5	2	25	25	37	²⁰ / ₄₀	l. p.	General	Unknown in five cases	Died; 1 in 55 days	
Totals . .	106	34	104	36									

Percentage of Females = 25 + %. Percentage of Negroes = 24 + %.

GLAUCOMA.—43 Cases.

DIAGNOSIS.	RACE:		SEX:		AGE:			VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	From	to	avg.	from	to				
Glaucoma, absolute	4	5	2	7	23	70	54						
Glaucoma, acute inflammatory	1			1		48				l. p. Eserine gr. j to 3j	1 day	Improved	Never returned.
Glaucoma, secondary	2	3	2	3	26	52	43	l. p.		One enucleation and 1 iridectomy	Unknown	Improved, two cases	Secondary to iritis, only one eye affected.
Glaucoma, simple chronic	14	4	6	12	32	77	59	²⁰ / ₄₀		l. p. Eserine gr. j to 3j	1 day (then never returned), 1 unknown	Improved, one case	V. from l. p. to ²⁷ / ₆₀ .
										Iridectomy (1 case) Iridectomy and extrac traction of lens (one case)	4 months 41 days	Improved	
Glaucoma, simple incipient	2	1	1	2	24	69	49	²⁰ / ₃₀		l. p. Eserine gr. j to 3j	2 days (then never returned)	Improved, two cases	
Glaucoma, sub-acute	4	3	3	4	32	80	47	²⁰ / ₁₀		l. p. Iridectomy Eserine gr. j to 3j	41 days 38 days	Improved	Latter V. from fingers 1 foot to ²⁰ / ₃₀ ; bad spells for one year; lost other eye from glaucoma 6 yrs. ago; clerk, aged 40. In 21 cases both eyes were affected in 6, only one eye in 15.
Totals . . .	27	16	14	29									

Percentage of Females, 67 + %.

Percentage of Negroes, 37 + %.

DISEASES AND INJURIES OF THE WHOLE GLOBE.—73 Cases.

DIAGNOSIS.	RACE:		SEX:		AGE:		VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	From	to	avg.	from				
Blow on eye, contusion of lids and globe	2	3	5		19	65	37	³⁰ / ₄₀	Atropine and hot bathing	Unknown		
Blow on eye, laceration of sclera and ciliary body		1	1			36			Enucleation	2 days and then sent to his doctor	Improved	Struck by handle of cotton jack-screw.
Blow on eye, iritis	1		1			17			Atropine and hot bathing	8 days	Improved	Hit with piece of iron.
ant. caps. cataract and detachment of retina									None			
Buphthalmos	1		1			13			Sent back to doctor			
Exophthalmic goitre	1			1		60		²⁰ / ₃₀				
Exophthalmic goitre with incipient cataract	1			1		60			Sent back to doctor			
Exophthalmic goitre with chorioiditis		1				15			1 p. KI. in large doses	Never returned		
Exophthalmos due to exostosis of orbit	1			1		50		²⁰ / ₃₀	Never returned			
Exophthalmos due to orbital hæmorrhage		1	1			18		²⁰ / ₁₀₀	Atropine and bandage	2 days, then never returned	Improved	Second day V. = ²⁰ / ₂₀ . Struck 10 days ago. Exophthalmos began 24 hours later. Was opened five years ago when some fluid escaped.
Exophthalmos (cystic) of orbit		1	1			45		²⁰ / ₇₀	Advised operation	Never returned		

DISEASES AND INJURIES OF THE WHOLE GLOBE.—Continued.

DIAGNOSIS.	RACE:		SEX:		AGE:		VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	From	to	avg.	from				
Exophthalmos due to tumor (probably sarcoma) of orbit	2			2	26	45		²⁰ / ₃₀	Advised operation in 1, non-interference in other	1st never returned 2d observed 60 days	Stationary	First began one month ago, 2d growth began two years ago; glaucomatous symptoms began eighteen months ago.
Exophthalmos due to orbital tumor		1		1		19			Advised removal	Never returned		
Foreign body (gun powder) within eyeball	1		1			30			l. p. None			
Hæmorrhage into vitreous (traumatic)	1		1			30		¹⁵ / ₃₀₀	Atropine and bandage	18 days	Cured	V. = ³⁰ / ₃₀ .
Orbital tumor, sarcoma		1	1			15			Exenteration: treated as open wound	33 days	Improved	Enucleation 3 years ago.
Orbital tumor, glioma	1		1			5			Exenteration and packing with iodoform gauze	14 days. (Orbit granulating went home)	Improved	Enucleation 3 months ago.
Panophthalmitis	2	4	5	1	8	53	26		Advised enucleation; atropine, heat	Enucleation in 3 cases; 1, 22 and 1, 25 days; 12 days then ran off	Improved	Found in 1 gun cap which entered thirty years ago, 1 began to pain 2 years ago.
Phthisis bulbi	20	10	20	10	6	70	42	⁸ / ₁₀₀	None	Enucleation, K. I. in 2 mos. (1 case)	Improved	V. = ³⁰ / ₃₀₀ .
Phthisis bulbi L. E., choroiditis (sympathetic?) R. E.	2		2		19	28		⁸ / ₁₀₀	Enucleation, large doses			

Sympathetic inflammation	1		1	8	None	Stuck pen-knife in L.E. 7 years ago; 2 mos. later R.E. became infirmed in 1864 piece of gun cap entered R.E.; 4 yrs. ago L. E. began to fail	Cured, 4 cases	V. in irritated eyes after enucleation, $\frac{30}{50}$, 3 penetrating wounds
Sympathetic inflammation, results of	1	1	8	53	None			4 phthisis bulbi, 1 traumatic disorganization, 1 panophthalmitis of unknown origin of fellow eye, and 1 cause unknown.
Sympathetic irritation	7	3	8	55	$\frac{30}{20}$ $\frac{30}{30}$	Advised enucleation; 2, 7 and 9 days; 1 operated in 4 cases		
Traumatic disorganization	1	1	2	15	Enucleation	7 days	Improved	
Totals . .	46	27	52	21				

Percentage of Females = 28 + %. Percentage of Negroes = 37 + %.

ERRORS OF REFRACTION.—617 Cases.

Errors of refraction (unclassified)	149	23	43	129	7	81	Refraction never worked out. (Highest glass necessary under atropine)
Asthenopia, accommodative	9	5	2	12	12	37	Rest under atropine A week or two
Astigmatism, irregular		1		1		18	Under atropine $\frac{30}{10}$ $\frac{30}{200}$
Spasm of ciliary muscle	2		1	1	13	33	None
							Atropine $\frac{30}{40}$ $\frac{30}{50}$
							2 days
							Cured
							The negroes simply wished to wear glasses I believe.
							V. under atropine = $\frac{30}{50}$.

ERRORS OF REFRACTION.—Continued.

DIAGNOSIS.	RACE:		SEX:		AGE:		VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	om	to	avg.	from to				
H.	159	28	51	136	6	71	32	30/15	+ 8° D.	3 or 4 days	Improved	V. with glass never worse than 20/60.
HAs.	8		2	6	12	38	30	20/20	+ 3° D. ax. 90°	3 or 4 days	Improved	V. with glass never worse than 20/20.
H.HAs.	70	8	14	64	7	76	25	20/15	+ 5° C + 1° ax. 90°	3 or 4 days	Improved	V. never worse than 20/60.
M.	55	5	21	39	5	73	28	20/40	— 14° D.	3 or 4 days	Improved	V. with glass never lower than 20/60 when fundus healthy.
MAs.	3			3	24	39	30	20/20	— 24° ax. 60°	3 or 4 days	Improved	Ax. 180° once, oblique twice.
MMAs.	20	1	3	18	10	60	20	20/30	— 8° C — 2° ax. 180°	3 or 4 days	Improved	
HAs.MAs.	1		1			30	20	20/40	+ 1.5° ax. 90° — 1° ax. 180°	3 or 4 days	Improved	
<i>Anisometropia</i>												
H. and E.	1			1		47		20/200		3 or 4 days	Improved	Normal eye amblyopic
M. and E.	1			1		9		20/40		3 or 4 days	Improved	
H. and HAs.	5			5	14	24	20	20/15		3 or 4 days	Improved	
H. and HAs.MAs.	1			1		26		20/60		3 or 4 days	Improved	
H. and M.	1			1		60		20/70		3 or 4 days	Improved	
HAs. and MAs.	1			1		46		10/70		3 or 4 days	Improved	
H.HAs. and MAs.	1			1		18		20/50		3 or 4 days	Improved	
HAs.												
M. and MMAs.	2			2	20	28		20/200		3 or 4 days	Improved	
MAs. HAs. and MMAs.	1					36		20/40		3 or 4 days	Improved	
Totals	490	71	140	421								
P.	40	16	14	42								
Grand total.	530	87	154	463								

Percentage of Females = 75 + per cent.

Percentage of Negroes = 14 + per cent.

AFFECTIONS OF THE EXTRINSIC OCULAR MUSCLES.—149 Cases.

DIAGNOSIS.	RACE :		SEX :		AGE :		VISION :		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	From	to	avg.	from				
All muscles supplied by third nerve, paralysis of	5	3	5	3	3	50	33	20/15	20/200	KI. pushed to the limit 75 and 111 days of tolerance	Cured, 2 cases	
Levator palp. sup. paralysis of (ptosis)	4	4	7	1	16	64	39	20/20	20/30	None returned for treatment		
Levator palp. sup. paralysis of, with paresis of int. rectus	1		1		35			20/20		Faradic electricity, KI. 30 days gr. x t. i. d.	Cured	Relapse 1 month later cured by same treatment.
Nystagmus	1	2	3	1	22	39	30	20/50	20/200	None		
Orbicularis, paralysis of	4		3		60	85	68	20/30	20/200	None. Never returned		
Orbicularis, fibrillar contractions of	2		1	1	33	53		20/30	20/20	Never returned		
Rectus externus, insufficiency of	4		2	2	9	39	25	20/20		Strychnia and prisms	Improved	
Rectus externus, paralysis of	8	1	6	3	7	72	33	20/15	20/100	Never returned		
Rectus externus, paresis of	5	3	6	2	12	67	34	20/15	20/200	Prisms, KI., & HgCl ₂ in full doses	21 days, 1 case; others unknown	One case certainly syphilitic.
Rectus internus, insufficiency of	2		1	1	12	29		20/20		Lenses and prisms	30 days, 1 case	Improved, one case
Rectus internus, paralysis of	1		1			21				Never returned		
Rectus internus, hysterical paralysis of		1		1		22						

AFFECTIONS OF THE EXTRINSIC OCULAR MUSCLES.—Continued.

DIAGNOSIS.	RACE:		SEX:		AGE:		VISION:		TREATMENT.	DURATION OF TREATMENT.	CONDITION ON DISCHARGE.	REMARKS.
	W.	N.	M.	F.	From	to	avg.	from				
Rectus int. and inf., paresis of	1			1		63		$\frac{30}{30}$	Sent to neurologist			
Obliquus superior	1		1			23		$\frac{30}{30}$	Never returned			
Insufficiency of						5			Atropine	5 days	Slightly improved	
Strabismus, convergent alternating				1								
Strabismus, convergent concomitant	71	3	36	38	1	49	12	$\frac{20}{30}$	Atropine and glasses	2 unknown, 1, 25 and 1, 39 days	Almost cured, 4 cases	
								1 ft.	Atropine and glasses, single strabotomy in 27 cases; double in 4 cases; strabotomy and advancement of ext. rect. in 1 case	From strabotomy to discharge, average time 20 days	Perfect correction in 26; almost perfect in 6 cases	V. o. u. before operation= $\frac{20}{30}$ in 5 cases. In 1 case V. improved in 16 days after operation from $\frac{20}{30}$ to $\frac{20}{30}$ (aged 20).
Strabismus, convergent fixed, high amblyopia and rotary nystagmus	1			1		14		$\frac{30}{80}$	Single strabotomy	11 days	Perfect correction	
Strabismus, convergent fixed with traumatic cataract	1			1		20		$\frac{20}{30}$	Cataract needled; strabotomy and subseq. advancement of ext. rectus	240 days	Almost perfect correction	
Strabismus, convergent paralytic	1		1			21 m			None			
Strabismus, convergent periodic	8	1	2	7	1	7		4 could not read	None	In one who could read V. o. u.= $\frac{20}{30}$		Had convulsions one week ago.
Strabismus, divergent concomitant	4	1	2	3	16	39	23	$\frac{20}{15}$ $\frac{30}{10}$	Division of ext. rectus, 2 cases	Unknown	Perfect correction	
Strabismus, divergent, fixed (leucoma)	2	2	1	3	1	22	13	$\frac{30}{30}$	Atropine, glasses and division of ext. rectus	6 days (one case only)	Perfect correction	
Totals	128	21	79	70								Percentage of Females = 47 (almost) %.
												Percentage of Negroes = 14 + %.